SRS TB ANALYSIS

Files and cuts

Files/runs:

- Run 11 - 5 GeV, energy scan, planes 4-8, 10, 12, 14
- Run 74 – 5 GeV, channel 51, no FLAME, planes 1-8

W in front of the 1st sensor!

CR-RC filter

$$S(t) = A \frac{t - t_0}{\tau} \exp - \left(\frac{t - t_0}{\tau} \right) \theta(t - t_0)$$

A – amplitude (MIP), τ – shaping time, t_0 – time from signal arrival until reaching the maximum
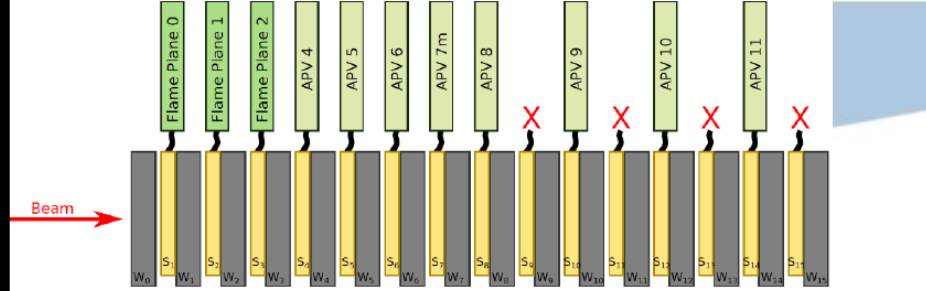
Signal cuts (to reduce noise):

Veta's cuts HG:
 $1 < \tau < 3$, $0 < $ signal < 2000 $3 < t_0 < 7.5$, nn $> 60\%$

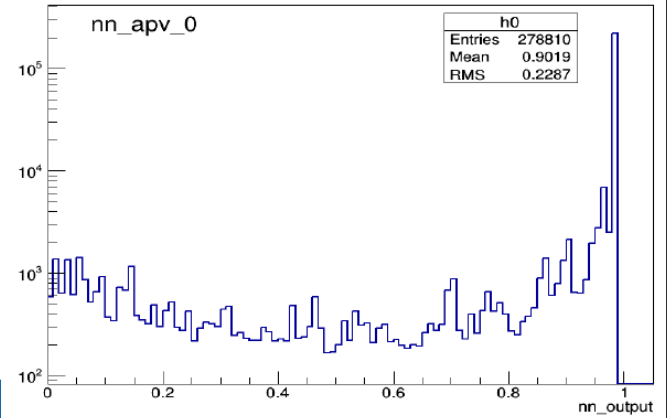**Veta's cuts LG:**
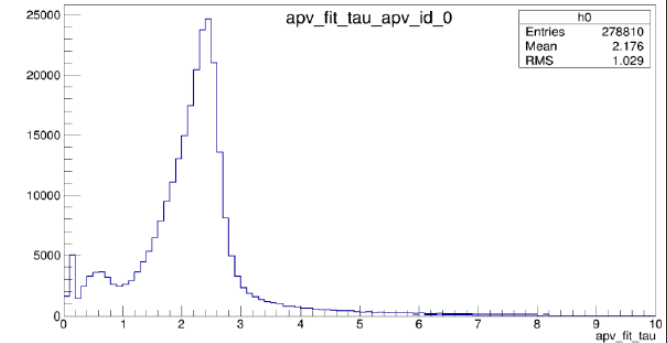 $0.2 < \tau < 3$, $0 < $ signal < 2000 $1.8 < t_0 < 5.5$, nn $> 60\%$

Set-up configuration for SRS run182
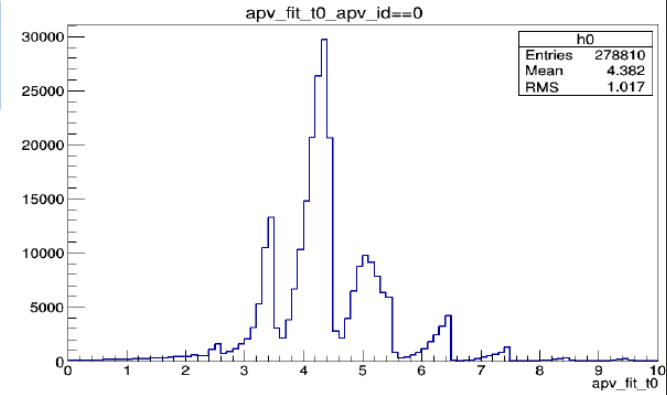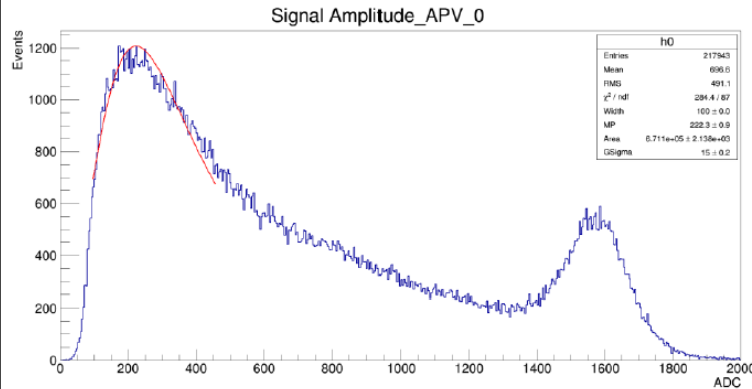
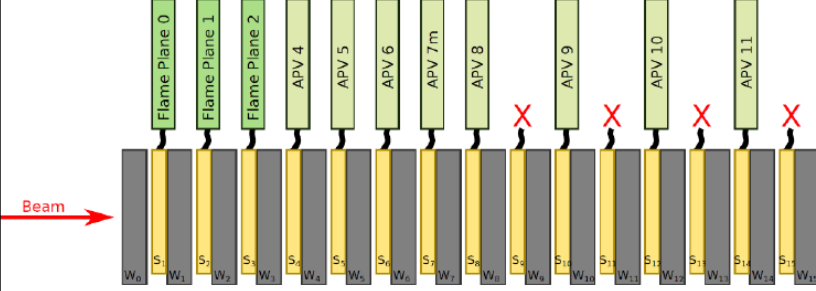# Signal selection: S_{max} < 2000 ADC

apv_reco->Draw("apv_signal_maxfit>>h0",

"apv_id==0 &&

apv_fit_t0>3,0 && apv_fit_t0<7,5 &&

apv_fit_tau>0.2 && apv_fit_tau<3 &&
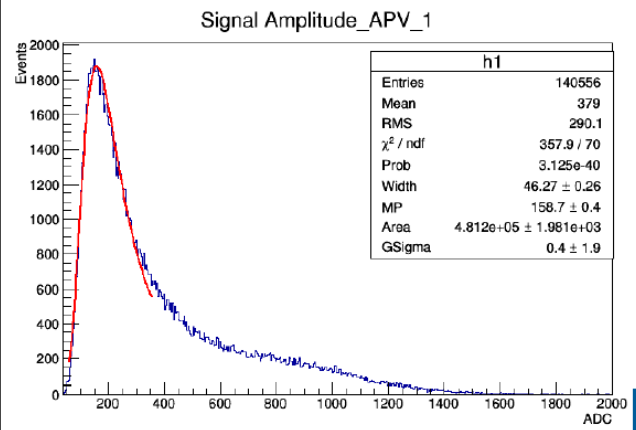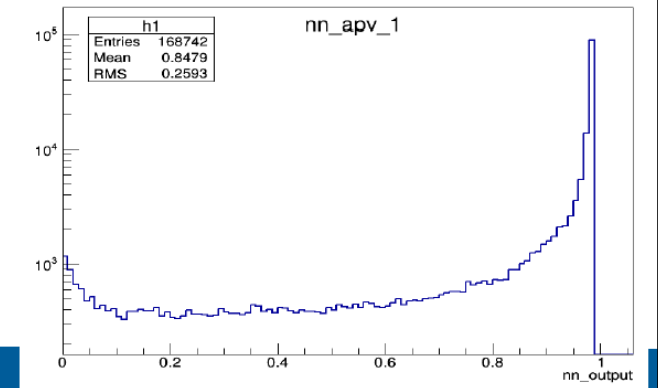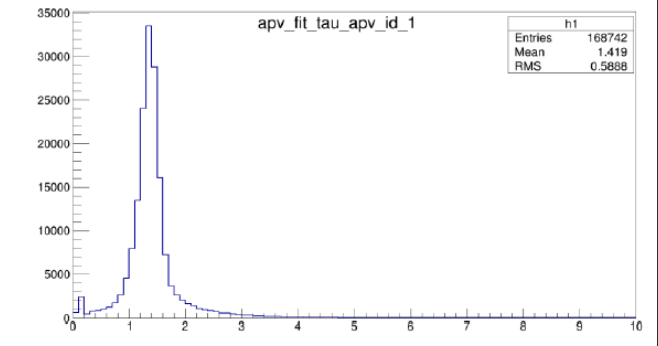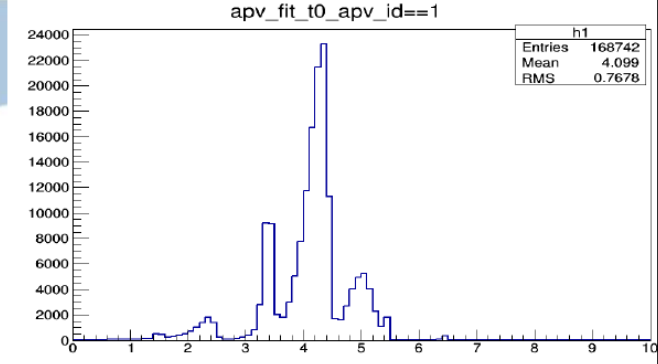
apv_nn_output>0.6")

Taken from Veta's talk

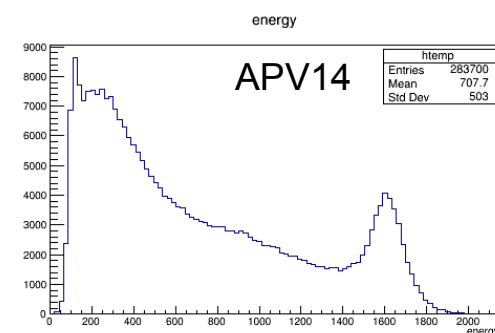**Set-up configuration for SRS run182**

Signal selection: S_{max} < 2000 ADC
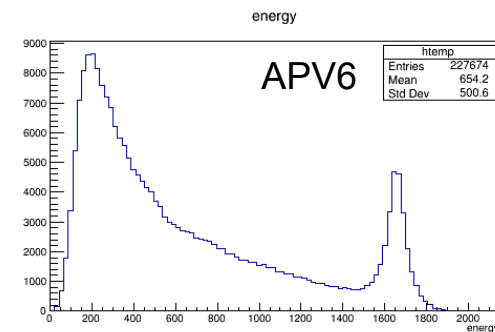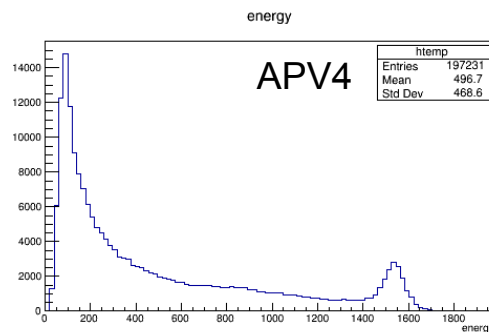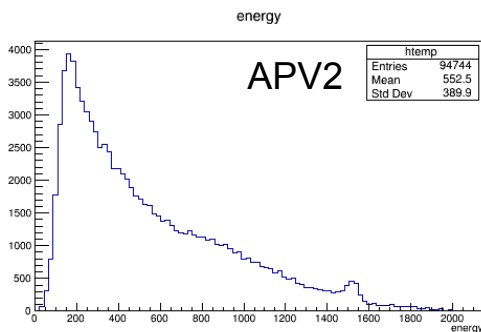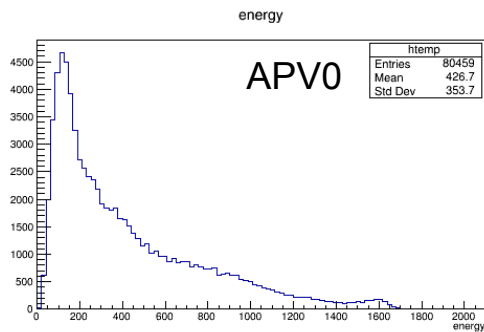
apv_reco->Draw("apv_signal_maxfit>>h0",

"apv_id==0 &&

apv_fit_t0>1.8 && apv_fit_t0<5.5 &&

apv_fit_tau>0.2 && apv_fit_tau<3.0 &&
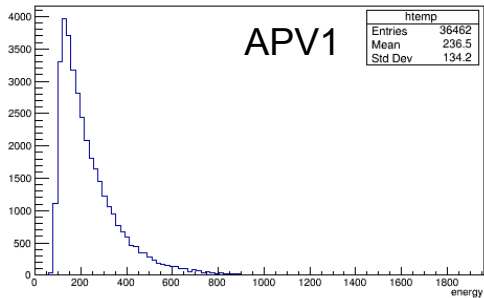
apv_nn_output>0.6")
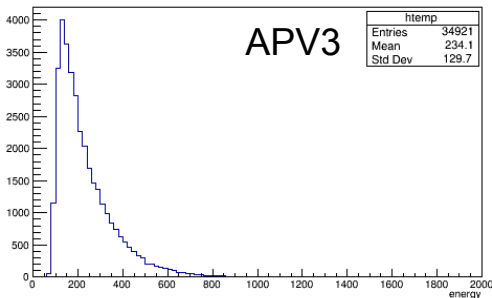
Taken from Veta's talk

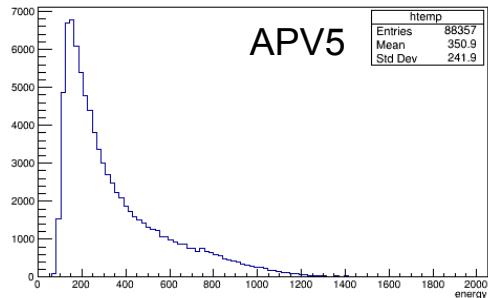# Run 74, HG, energy in each plane
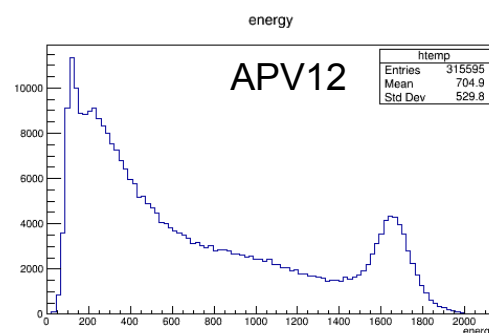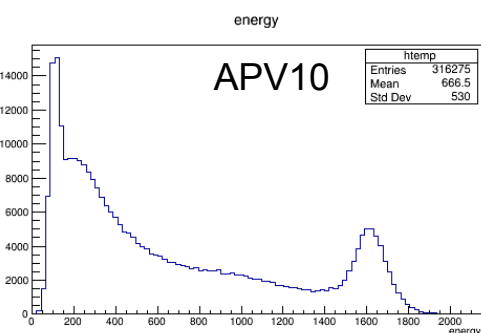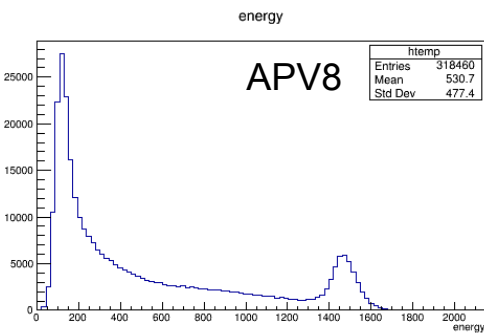
Run 74, LG, energy in each plane
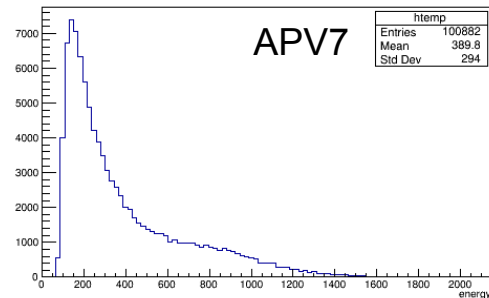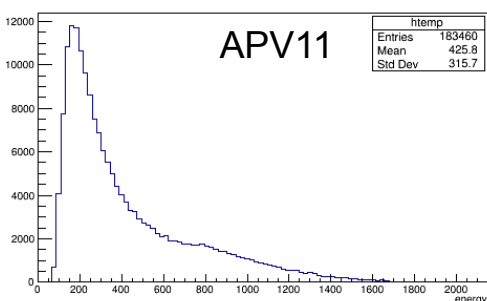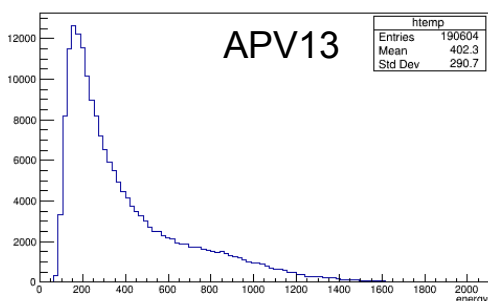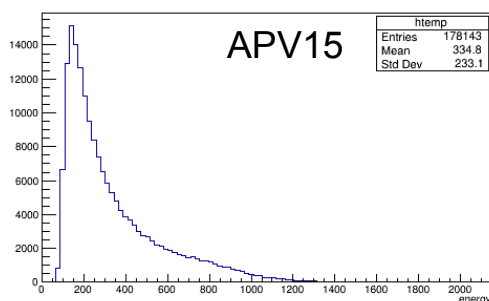
APV0
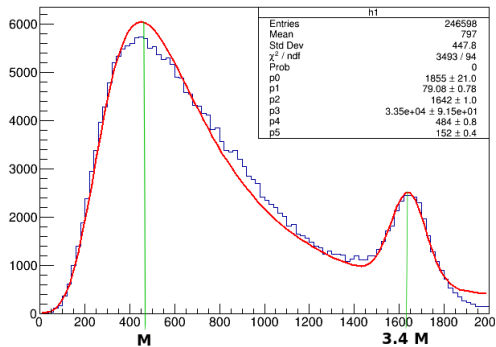
APV2
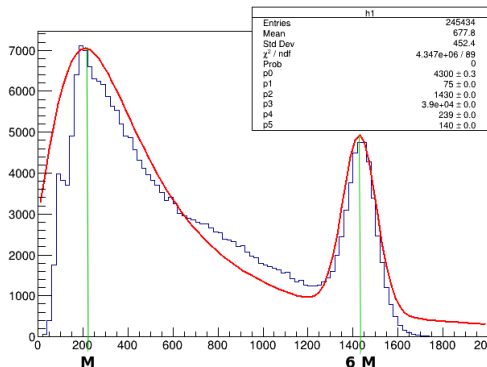
APV4

APV6

APV8

Fit parameters:

p0 – Gaussian scale factor
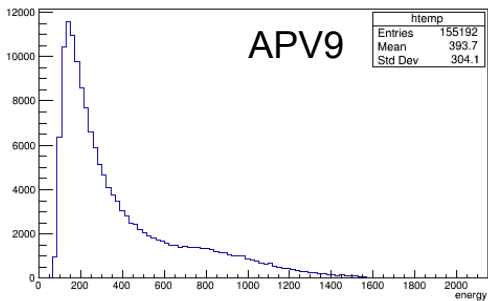p1 – Gaussian σ
p2 – Gaussian mean
p3 – Landau scale factor
p4 – Landau mean
p5 – Landau σ

Measurement of shower development and its Molière radius with a four-plane LumiCal test set-up, Eur. Phys. J. C (2018) 78:135

Fig. 14 Energy deposition in the calorimeter for a beam comprising electrons and muons
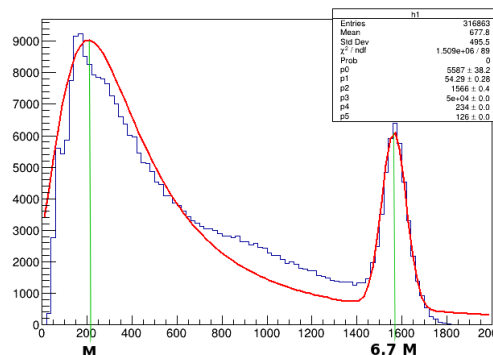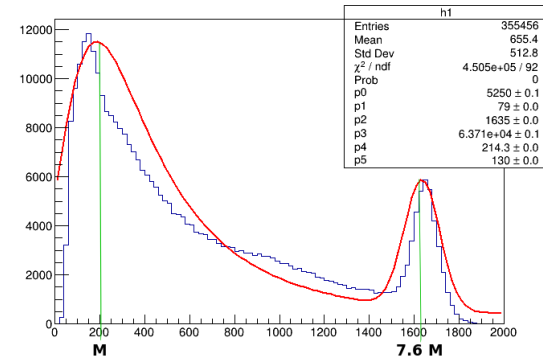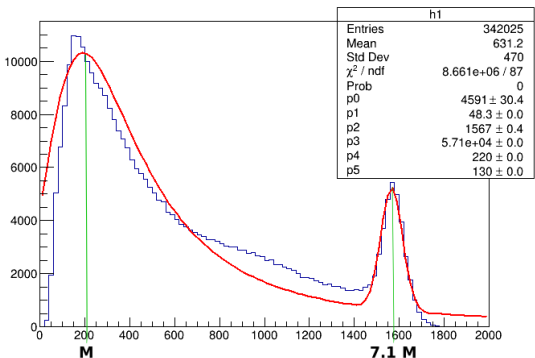
Run 74, HG, energy and fit

APV6

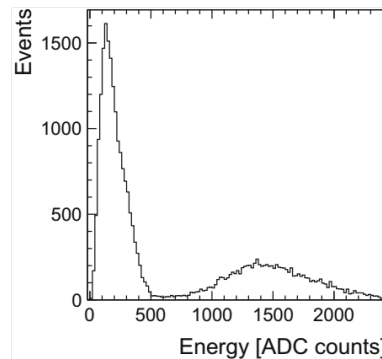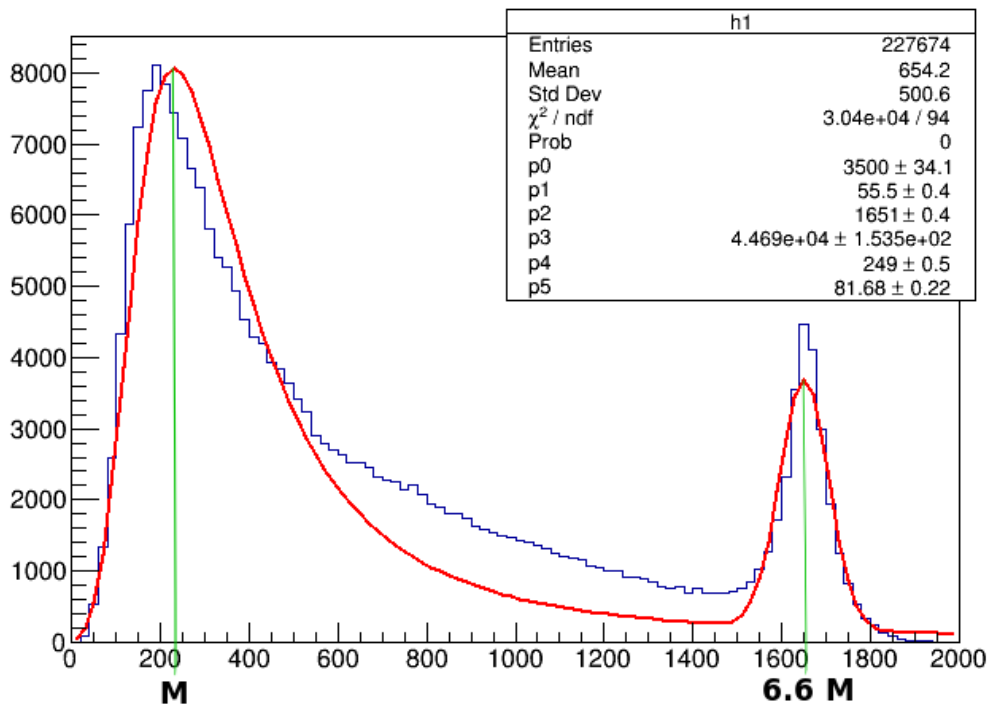| h1	
Entries	227674
Mean	654.2
Std Dev	500.6
χ^2 / ndf	3.04e+04 / 94
Prob	0
p0	3500 ± 34.1
p1	55.5 ± 0.4
p2	1651 ± 0.4
p3	4.469e+04 ± 1.535e+02
p4	249 ± 0.5
p5	81.68 ± 0.22

Fit parameters:

p0 – Gaussian scale factor
p1 – Gaussian σ
p2 – Gaussian mean
p3 – Landau scale factor
p4 – Landau mean
p5 – Landau σ